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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,654	05/05/2006	Bernadette Craster	57,0513 US PCT	8888
370/3 7590 06/17/2008 SCHLUMBERGER-DOLL RESEARCH ATTN: INTELLECTUAL PROPERTY LAW DEPARTMENT P.O. BOX 425045 CAMBRIDGE, MA 02142				
EXAMINER HARCOURT, BRAD				
ART UNIT		PAPER NUMBER		
3676				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/542,654

**Applicant(s)**

CRASTER ET AL.

**Examiner**

Brad Harcourt

**Art Unit**

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11, 13, 15-27, 29-33 and 35-66 is/are pending in the application.
- 4a) Of the above claim(s) 55 and 56 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 37 and 40 is/are allowed.
- 6) ☒ Claim(s) 1, 3-11, 13, 15-27, 29-33, 35, 36, 38, 39, 41-54 and 58-66 is/are rejected.
- 7) ☒ Claim(s) 2 and 57 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-848)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-8, 11, 13, 15-20, 27, 30, 32, 33, 35, 36, 38, 39, 41-51, 53, 58, 59 and 61-66 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cheymol et al. (US Patent No. 4,913,232).

Cheymol discloses a system for maintaining zonal isolation in a wellbore, characterized in that said system comprises, at specific locations Z1 and Z2 along said wellbore, sealing elements (rings) 2, said sealing element being able to deform both during and after placement and wherein the sealing element is maintained under compression after completion of the placement; sealing elements 2 are connected to a fluid communication element T designed to pressurize at least part 6, 18 of the sealing element 2; sealing elements 2 are confined in a volume surrounded by materials (formation P) of high Young's modulus (solid rock); sealing elements 2 comprise an elastomer sealing material that is an elastic solid; sealing elements 2 comprise a sealing material that is a settable liquid filler 11 pumped through tubing T; liquid filler 11 is "constituted by liquid elastomers such as fluorinated silicones, polysulfides, polythioethers and also epoxy" (col. 8, lines 22-24) that constitutes a yield stress fluid and withstand pressures "of several hundred bars" (col. 8, line 18).

Cheymol does not explicitly define the Young's modulus of the sealing element 2, but an elastomer material would have a Young's modulus between 100 to 1500 MPa. The system is designed for "separating at least two production zones in a well" (abstract) so necessarily seals 2 would be deformed and all sealing elements and materials would be in place for the lifetime of the well. The formations around the wellbore comprise permeable sections Z1 and Z2, and impermeable sections surrounding it (Fig. 6). Seal ring 2 is placed in a volume defined by casing P, tubing T and cement C. Cement C maintains upper seal 2 in compression.

Communication to the seals 2 can be "normally closed by a valve which responds to a certain pressure threshold" (col. 7, lines 6-8). Additionally, fluid communication can be "with an injector device being lowered inside the casing, other systems may also be used for the same purpose" (col. 7, lines 8-9) that constitutes a control line tube or a delivery line tube between the surface and sealing element.

In reference to claim 50, the limitation "well tube" is interpreted to mean a well tubing string independent of casing T.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232).

Cheymol, as described above, discloses all of the limitations of the above claims with the exception of having a cement sheath around seal members or seal members that are between 1 and 30 meters in length. Cheymol discloses cement C above a seal member, and discloses that prior art discloses that "gap H extending axially between two zones was filled with cement in the annular space 5 between the rock wall of the well P and its casing T" (col. 4, lines 36-39). It would have been obvious to a person having ordinary skill in the art at the time of the invention to sheath a seal element with cement on both sides on the zonal isolation of Cheymol to provide a cheap permanent reinforcing seal. It also would have been obvious to a person having ordinary skill in the art at the time of the invention to have a seal member between 1 and 30 meters long as a seal shorter than that may not provide an effective seal and a seal longer than that would be overly expensive to produce.

Claims 9 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) in view of Eoff et al. (US Patent No. 6,187,839).

Cheymol discloses all of the limitations of the above claims with the exception of using a visco-plastic sealing material or a gelled sealing material. Eoff discloses "methods of sealing subterranean zones" (col. 2, lines 24-25) that includes "polypropylene glycol" (col. 3, line 65), which is a visco-plastic material, that polymerizes "thereby forming a sealing and plugging gel in the zone" (col. 6, lines 9-10). It would

have been obvious to a person having ordinary skill in the art at the time of the invention to include a visco-plastic gel seal on the zonal isolation system of Cheymol in view of Eoff to create a high strength sealing body that can be pumped into an inflatable packer.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) Willauer et al. (US Patent No 6,050,336).

Cheymol discloses all of the limitations of the above claim with the exception of including a visco-elastic seal member. Willauer discloses a plug using a visco-elastic material to seal off an area of a wellbore. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use a visco-elastic plug on the zonal isolation apparatus of Cheymol in view of Willauer to provide a seal apparatus that changes shape when exposed to high pressure.

Claims 23 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) in view of Brezinski et al. (US Patent No. 6,854,522).

Cheymol discloses all of the limitations of the above claims with the exception of disposing a packer on an expandable tubing string. Brezinski discloses a system and method comprising a seal element 46 and expandable tubing 42. It would have been obvious to a person having ordinary skill in the art at the time of the invention to include expandable tubing that the packer is disposed on in the system of Cheymol in view of Brezinski to provide a system that can be used with any sized borehole. In reference to claim 31, expanding the tubular element would necessarily press the packer against the wellbore wall.

Claims 22, 29 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) in view of Cronmiller (US Patent No. 4,339,000).

Cheymol discloses all of the limitations of the above claims with the exception of expanding cement and plugging a well for abandonment. Cronmiller discloses using a cement "capable of expanding during the curing thereof" (col. 5, lines 9-10) with a plug 16 intended to seal off an abandoned production zone (Fig. 3). It would have been obvious to a person having ordinary skill in the art at the time of the invention to use expanding cement to plug a well on the isolation system of Cheymol in view of Cronmiller to ensure a tighter seal on a production zone that was no longer profitable.

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheymol et al. (US Patent No. 4,913,232) in view of Duggan et al. (US Patent Application Publication No. 2006/0283607).

Cheymol discloses all of the limitations of the above claims with the exception of underreaming a section of the wellbore before placing a seal. Duggan discloses sealing element 16 that is used "drilling below an existing section of bore-lining tubing to a larger diameter than the inner diameter of the existing tubing... by means of an underreamer" (par. 0022). It would have been obvious to a person having ordinary skill in the art at the time of the invention to underream a section of the bore on the system of Cheymol in view of Duggan to expand a bore to any desired diameter.

***Response to Arguments***

Applicant's arguments filed 3/26/2008 have been fully considered but they are not persuasive.

As applicant notes, several claims were omitted from the previous Office Action and are now rejected in this action.

Applicant argues that the rejection to claims 1 and 36 should be withdrawn as Cheymol does not disclose a sealing element that is deformable during and after placement. Specifically, applicant argues that seal elements 2 are not seal elements and are not maintained under compression during and after the setting process and are not deformable during and after the setting process. While seal elements 2 are not the primary sealing feature of Cheymol, they do provide an integral step in the sealing process and thus are considered to be seal elements. Additionally, seal elements 2 are inherently deformable during and after the setting process as they are elastomeric and will deform and compress as the pressure in the wellbore from formations Z1 and Z2 vary. Additionally, they are inherently maintained under compression as there will be a compressive force from the formation pressures of formation Z1 and Z2 and as the uppermost seal 2 is in contact with cement C it will provide some amount of compressive force.

Applicant argues that the rejections to claims 4, 5, 7-11, 39 and 57, 59 and 60 should be withdrawn as Cheymol does not disclose a seal material in a solid or viscous state. Cheymol discloses solid seal element 2 which is in a solid state and viscous settable seal material 11.



Applicant argues that the rejection to claims 15-17, 58, 61 and 66 should be withdrawn as Cheymol does not disclose a sealing element being deformable for a lengthy period of time. This argument was addressed with the arguments to claims 1 and 36.

Applicant argues the combination of references applied to claims 9 and 60 is improper as Eoff does not discuss zones of a wellbore. Contrary to this, Eoff discloses that "This invention relates to sealing subterranean zones penetrated by well bores" (col. 1, lines 6-7).

Applicant argues that the rejections to claims 10, 22, 29, 52 and 54 should be withdrawn for similar reasons as discussed in reference to claims 1 and 36.

Applicant's arguments with respect to claims 23 and 31 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Allowable Subject Matter***

Claims 2 and 57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 37 and 40 allowed.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brad Harcourt whose telephone number is (571)272-7303. The examiner can normally be reached on Monday through Friday from 8:30 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer H Gay/  
Supervisory Patent Examiner, Art  
Unit 3676

BH  
6/09/081